NOTE ON THE MANTISPID *CLIMACIELLA BRUNNEA* (NEUROPTERA: MANTISPIDAE) IN A COASTAL MARSH HABITAT[1]

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ABSTRACT: The mantispid *Climaciella brunnea* was observed in coastal marshes of Mississippi where eggs were deposited on the black needlerush *Juncus roemerianus*. Egg batches, collected from several marsh localities, contained from 733 to 2912 eggs and were deposited in a straight band near the top of the *Juncus* leaf. The lycosid spider *Lycosa watsoni* was found to serve as a host for the larvae of *C. brunnea*. A single adult mantispid emerged from an egg sac and a mantispid larva was seen clinging to a juvenile spider from field collections.

The mantispid *Climaciella brunnea* (Say) is a rather large insect which mimics polistine wasps (Smith 1934; Batra 1972; Opler 1981). It is part of what appears to be a complex of morphs or subspecies occurring throughout North America, Mexico and Central America (Oliver S. Flint, pers comm; Opler 1981; Redborg and MacLeod 1983). Adults are predaceous on insects (Borror et al. 1976) while larvae feed on spider eggs (Redborg and MacLeod 1983). This report documents the occurrence of *C. brunnea* in brackish marshes of Mississippi with some observations on oviposition and host record for the juvenile of the species.

Climaciella brunnea was first noted by the capture of an adult male in a pure stand of the black needlerush *Juncus roemerianus* Scheele on 15 October 1982 near the mouth of the Jourdan River, St. Louis Bay, Hancock Co., Mississippi. No further observations were made until a female was seen laying eggs in the same area on 26 June 1983. Attempts were then made to determine the extent to which *C. brunnea* used *Juncus* to deposit eggs and to determine if any of the spiders found in this habitat were host to this species. Host observations were restricted to *Lycosa watsoni* Gertsch because it was believed to be the only abundant spider in the marsh habitat producing an egg sac of appropriate size to support *C. brunnea* larvae. This conclusion was based on the size of the adult *Climaciella* cited above. Kurt E. Redborg (pers. comm.) has suggested that my conclusion is probably correct based on his observations of *Climaciella* in Illinois but smaller spiders cannot be ruled out. *Lycosa watsoni* can reach densities as high as 18.6 spiders/m^2 in *Juncus* stands and 34.0 spiders/m^2 in adjacent stands of *Spartina cynosuroides* (L.) Roth and reproduces from March through November (LaSalle and de la Cruz, unpublished data).

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Searches for *C. brunnea* egg batches were made in several *Juncus* marshes along the Mississippi coast during the summer of 1983. No attempt was made to collect in other types of marshes. Egg batches were collected in the following localities:

Hancock County: 1) marsh at mouth of Jourdan River, St. Louis Bay.
2) marsh 3 km south of Lakeshore.

Jackson County: 3) marsh at mouth of Fort Bayou, Ocean Springs,
4) marsh at Gravaline marsh, 10 km se of Ocean Springs.

All egg batches observed were deposited on *Juncus* leaves in a straight band along one side of the leaf beginning about 3-4 cm below the tip (Figure 1). Egg batches from two localities and from different dates were measured and the eggs counted (Table 1). Mean values of eggs per batch were calculated

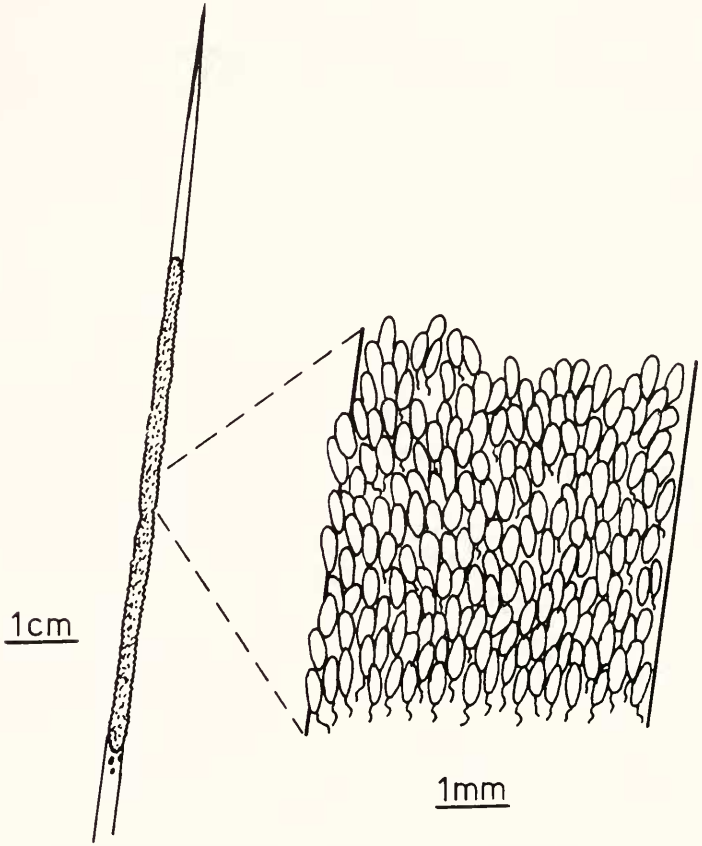

Figure 1. *Climaciella brunnea* egg batch deposited on a leaf of *Juncus roemerianus.*

for each collection date to account for temporal differences. Mean number of eggs per batch from Fort Bayou was 2004.8 and batches averaged 4.4 cm in length. Fewer batches were collected from St. Louis Bay later in the season and contained fewer eggs. Without associated female size, these data on fecundity are difficult to interpret but do provide information on range of egg batch size. Smith (1934), Hoffman (1936) and Batra (1972) reported single egg batch sizes, ranging between 250 and 1350 eggs per batch.

Six female *L. watsoni,* carrying egg cases, were collected from the Jourdan River marsh on 26 June 1983 and returned to the lab. A single mantispid emerged from a case after 2 days and was quickly attacked by the female spider. A search for larvae associated with *L. watsoni* was also conducted during the course of sorting and counting spiders from a study of the spider faunas of *Juncus* and *Spartina* marshes in St. Louis Bay (LaSalle and de la Cruz, in press). A single larva, assumed to be *C. brunnea,* was observed clinging to the venter of an immature female *L. watsoni* collected in the St. Louis Bay *Juncus* marsh on 11 September 1982.

Redborg and MacLeod (1983) observed larvae of *C. brunnea* clinging near the edge of the host spider's carapace. They report that *C. brunnea* larvae are obligate spider boarders and enter egg sacs only as the latter are being formed. Batra (1972) tested several potential insect and spider hosts with *C. brunnea occidentalis* larvae and reported that larvae clung to workers of the bumblebee *Bombus morrisoni* Cresson and the wasp *Polistes fuscatus utahensis* Hayard. Whether *C. brunnea* larvae feed on these insects or their young was not determined. Redborg and MacLeod (1983) collected larval *C. brunnea* in Illinois from three species of lycosid spiders: *Schizocosa saltatrix* (Hentz), *Lycosa punctulata* Hentz and *Schizocosa* sp., while George and George (1975) reported the emergence of an adult *C. brunnea* from the egg sac of *Tarantula* sp. Although *C.*

Table 1. Length of batch and number of eggs for egg batches of *Climaciella brunnea* collected from Mississippi *Juncus* marshes.

Locality and Date	Length (cm)	No. Eggs
Fort Bayou, 16 July 1983	5.8	2912
	5.1	2335
	6.0	2314
	4.8	2279
	3.3	1912
	3.8	1678
	4.2	1667
	2.2	941
St. Louis Bay, 17 August 1983	8.1	2606
24 September 1983	2.1	733

brunnea has been successfully reared from the egg sacs of spiders in other families, the larvae are probably associated largely with lycosids (Redborg, pers. comm.).

Newly hatched *C. brunnea* larvae were obtained on 17 August and 24 September 1983 from the St. Louis Bay marsh. The larvae became very active when stimulated by the passage of any object above them. Larvae responded by positioning the terminal end of the abdomen against the substrate and extending their waving legs toward the object. This behavior has been previously described by Hoffman (1936) and Batra (1972) and more recently by Redborg and MacLeod (1983) who suggest that, unlike other species of mantispids, *C. brunnea* larvae do not actively seek hosts but board passing hosts.

The seemingly common occurrence of this mantispid in coastal marshes makes it a prime candidate for further study, particularly with respect to its host *L. watsoni*. The spiders and mantispid eggs and larvae are easily collected, permitting easy experimentation with both host and predator.

ACKNOWLEDGMENTS

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